

SEQUENCE LISTING



<110> Tudan, Christopher R.
 Merzouk, Ahmed
 Arab, Lakhdar
 Saxena, Geeta
 Eaves, Connie J.
 Cashman, Johanne
 Clark-Lewis, Ian
 Salari, Hassan
 University of British Columbia
 Chemokine Therapeutics Corporation

<120> CXC Chemokine Receptor 4 Agonist Peptides

<130> 080421-000100US

<140> US 10/086,177

<141> 2002-02-26

<150> CA 2,305,036

<151> 2000-04-12

<150> US 60/232,425

<151> 2000-09-14

<150> CA 2,335,109

<151> 2001-02-23

<150> US 09/835,107

<151> 2001-04-12

<160> 214

<170> PatentIn version 3.3

<210> 1

<211> 67

<212> PRT

<213> Homo sapiens

<220>

<223> human SDF-1alpha

<400> 1

Lys	Pro	Val	Ser	Leu	Ser	Tyr	Arg	Cys	Pro	Cys	Arg	Phe	Phe	Glu	Ser
1				5					10					15	
His	Val	Ala	Arg	Ala	Asn	Val	Lys	His	Leu	Lys	Ile	Leu	Asn	Thr	Pro
			20					25					30		
Asn	Cys	Ala	Leu	Gln	Ile	Val	Ala	Arg	Leu	Lys	Asn	Asn	Asn	Arg	Gln
		35					40					45			
Val	Cys	Ile	Asp	Pro	Lys	Leu	Lys	Trp	Ile	Gln	Glu	Tyr	Leu	Glu	Lys
	50					55					60				
Ala	Leu	Asn													
65															

<210> 2

<211> 93

<212> PRT

<213> Homo sapiens

<220>

<223> human SDF-1 precursor, PBSF

<400> 2

```
Met Asn Ala Lys Val Val Val Val Leu Val Leu Val Leu Thr Ala Leu
1          5          10          15
Cys Leu Ser Asp Gly Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys
          20          25          30
Arg Phe Phe Glu Ser His Val Ala Arg Ala Asn Val Lys His Leu Lys
          35          40          45
Ile Leu Asn Thr Pro Asn Cys Ala Leu Gln Ile Val Ala Arg Leu Lys
          50          55          60
Asn Asn Asn Arg Gln Val Cys Ile Asp Pro Lys Leu Lys Trp Ile Gln
65          70          75          80
Glu Tyr Leu Glu Lys Ala Leu Asn Lys Arg Phe Lys Met
          85          90
```

<210> 3

<211> 93

<212> PRT

<213> Homo sapiens

<220>

<223> human SDF-1beta

<400> 3

```
Met Asn Ala Lys Val Val Val Val Leu Val Leu Val Leu Thr Ala Leu
1          5          10          15
Cys Leu Ser Asp Gly Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys
          20          25          30
Arg Phe Phe Glu Ser His Val Ala Arg Ala Asn Val Lys His Leu Lys
          35          40          45
Ile Leu Asn Thr Pro Asn Cys Ala Leu Gln Ile Val Ala Arg Leu Lys
          50          55          60
Asn Asn Asn Arg Gln Val Cys Ile Asp Pro Lys Leu Lys Trp Ile Gln
65          70          75          80
Glu Tyr Leu Glu Lys Ala Leu Asn Lys Arg Phe Lys Met
          85          90
```

<210> 4

<211> 17

<212> PRT

<213> Artificial Sequence

<220>

<223> synthetic CXCR4 agonist SDF-1(1-17), CTCE9902

<400> 4

```
Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Glu Ser
1          5          10          15
His
```

<210> 5

<211> 6

<212> PRT

<213> Artificial Sequence

<220>

<223> CXCR4 agonist sequence motif within 20 amino acids
of the N-terminus

```

<400> 5
Arg Phe Phe Glu Ser His
1 5

<210> 6
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic SDF-1 peptide analogue CXCR4 agonist

<400> 6
Lys Pro Val Ser Leu Ser Tyr Arg Cys
1 5

<210> 7
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CXCR4 agonist SDF-1(1-9)-2-C9/C9-cysteine dimer,
CTCE9901

<220>
<221> MISC_FEATURE
<222> (7)..(7)
<223> dimerised by formation of a disulfide bond between two Cys
residues in position 7 of two SEQ ID NO:7 peptides

<400> 7
Lys Pro Val Ser Leu Ser Tyr Arg Cys
1 5

<210> 8
<211> 10
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CXCR4 agonist SDF-1(1-9)-2
(Compound #3)

<220>
<221> MOD_RES
<222> (10)..(10)
<223> Xaa = Lys whose epsilon amino group forms a covalent amide
bond with the alpha amino group of Cys at position 9 of
KPVSLSYRC (SEQ ID NO:9), thereby forming a dimer

<400> 8
Lys Pro Val Ser Leu Ser Tyr Arg Cys Xaa
1 5 10

<210> 9
<211> 9
<212> PRT
<213> Artificial Sequence

```

<220>
 <223> portion of synthetic CXCR4 agonist SDF-1(1-9)-2
 (Compound #3)

<220>
 <221> MOD_RES
 <222> (9)..(9)
 <223> Xaa = Cys whose alpha amino group forms a covalent amide
 bond with the epsilon amino group of Lys at position 10
 of KPVSLSYRCX (SEQ ID NO:8), thereby forming a dimer

<400> 9
 Lys Pro Val Ser Leu Ser Tyr Arg Xaa
 1 5

<210> 10
 <211> 9
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CXCR4 agonist dimer of SDF-1 amino
 acids 1-8

<220>
 <221> MOD_RES
 <222> (9)..(9)
 <223> Xaa = Lys whose epsilon amino group forms a covalent amide
 bond with the alpha amino group of Arg at position 8 of
 KPVSLSYX (SEQ ID NO:11), thereby forming a dimer

<400> 10
 Lys Pro Val Ser Leu Ser Tyr Arg Xaa
 1 5

<210> 11
 <211> 8
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CXCR4 agonist dimer of SDF-1 amino
 acids 1-8

<220>
 <221> MOD_RES
 <222> (8)..(8)
 <223> Xaa = Arg whose alpha amino group forms a covalent amide
 bond with the epsilon amino group of Lys at position 9
 of KPVSLSYRX (SEQ ID NO:10), thereby forming a dimer

<400> 11
 Lys Pro Val Ser Leu Ser Tyr Xaa
 1 5

<210> 12
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist SDF-1(1-14)-(G)-3-SDF-1(55-67)
 acid

<220>
 <221> MISC_FEATURE
 <222> (17)..(17)
 <223> Gly in position 17 may be present or absent

<400> 12
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 13
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist SDF-1(1-14)-(G)-4-SDF-1(55-67)
 acid, CTCE0013

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may independently be
 present or absent

<400> 13
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 14
 <211> 30
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist SDF-1(1-14)-(G)-3-SDF-1(55-67)
 amide

<220>
 <221> MISC_FEATURE
 <222> (17)..(17)
 <223> Gly in position 17 may be present or absent

<220>
 <221> MOD_RES
 <222> (30)..(30)
 <223> AMIDATION

<400> 14
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 15
 <211> 31
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> synthetic CXCR4 agonist SDF-1(1-14)-(G)-4-SDF-1(55-67)
 amide, CTCE0017, Compound A

 <220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may independently be
 present or absent

 <220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

 <400> 15
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

 <210> 16
 <211> 33
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> synthetic CXCR4 agonist SDF-1(1-17)-(G)-3-SDF-1(55-67)
 acid

 <220>
 <221> MISC_FEATURE
 <222> (20)..(20)
 <223> Gly in position 20 may be present or absent

 <400> 16
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Glu Ser
 1 5 10 15
 His Gly Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu
 20 25 30
 Asn

 <210> 17
 <211> 34
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> synthetic CXCR4 agonist SDF-1(1-17)-(G)-4-SDF-1(55-67)
 acid

 <220>
 <221> MISC_FEATURE
 <222> (20)..(21)
 <223> Gly in positions 20 and/or 21 may independently be
 present or absent

<400> 17
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Glu Ser
 1 5 10 15
 His Gly Gly Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala
 20 25 30
 Leu Asn

<210> 18
 <211> 33
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist SDF-1(1-17)-(G)-3-SDF-1(55-67)
 amide

<220>
 <221> MISC_FEATURE
 <222> (20)..(20)
 <223> Gly in position 20 may be present or absent

<220>
 <221> MOD_RES
 <222> (33)..(33)
 <223> AMIDATION

<400> 18
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Glu Ser
 1 5 10 15
 His Gly Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu
 20 25 30
 Asn

<210> 19
 <211> 34
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist SDF-1(1-17)-(G)-4-SDF-1(55-67)
 amide

<220>
 <221> MISC_FEATURE
 <222> (20)..(21)
 <223> Gly in positions 20 and/or 21 may be independently
 present or absent

<220>
 <221> MOD_RES
 <222> (34)..(34)
 <223> AMIDATION

<400> 19
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Glu Ser
 1 5 10 15
 His Gly Gly Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala
 20 25 30
 Leu Asn

<210> 20
 <211> 31
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-E24/K28-cyclic acid

 <220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

 <220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

 <400> 20
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

 <210> 21
 <211> 31
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-K20/E24-cyclic acid

 <220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

 <220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

 <400> 21
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

 <210> 22
 <211> 31
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-E24/K28-cyclic amide,
 CTCE0022

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently present or absent

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 22
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 23
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-K20/E24-cyclic amide,
 CTCE0021, Compound B

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently present or absent

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 23
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 24
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-K20/D24-(E24->D)-cyclic
 acid

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<400> 24
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Asp Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 25
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-K20/D24-(E24->D)-cyclic
 amide

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 25
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Asp Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 26
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-C9/C11-cyclic acid

<220>
 <221> MISC_FEATURE
 <222> (9)..(11)
 <223> cyclized with disulfide bridge

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<400> 26
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 27
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-C9/C11-cyclic amide

<220>
 <221> MISC_FEATURE
 <222> (9)..(11)
 <223> cyclized with disulfide bridge

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 27
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 28
 <211> 33
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-MIP-1alpha(36-50)-acid

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<400> 28
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Ser Lys Pro Gly Val Ile Phe Leu Thr Lys Arg Ser Arg Gln
 20 25 30
 Val

<210> 29
 <211> 58
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-MIP-1alpha(11-50)-acid

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<400> 29
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Cys Cys Phe Ser Tyr Thr Ser Arg Gln Ile Pro Gln Asn Phe
 20 25 30
 Ile Ala Asp Tyr Phe Glu Thr Ser Ser Gln Cys Ser Lys Pro Gly Val
 35 40 45
 Ile Phe Leu Thr Lys Arg Ser Arg Gln Val
 50 55

<210> 30
 <211> 33
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-MIP-1alpha(56-70)-acid

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<400> 30
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Glu Glu Trp Val Gln Lys Tyr Val Asp Asp Leu Glu Leu Ser
 20 25 30
 Ala

```

<210> 31
<211> 9
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CXCR4 agonist
      SDF-1(1-8)-2-lysine bridge dimer, CTCE9904

<220>
<221> MOD_RES
<222> (9)..(9)
<223> Xaa = lysinamide whose epsilon amino group forms a
      covalent amide bond with the alpha amino group of Arg at
      position 8 of KPVSLSYX (SEQ ID NO:32), thereby forming a
      dimer

<400> 31
Lys Pro Val Ser Leu Ser Tyr Arg Xaa
1              5

<210> 32
<211> 8
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CXCR4 agonist
      SDF-1(1-8)-2-lysine bridge dimer, CTCE9904

<220>
<221> MOD_RES
<222> (8)..(8)
<223> Xaa = Arg whose alpha amino group forms a covalent amide
      bond with the epsilon amino group of lysinamide at
      position 9 of KPVSLSYRX (SEQ ID NO:31), thereby forming a
      dimer

<400> 32
Lys Pro Val Ser Leu Ser Tyr Xaa
1              5

<210> 33

<400> 33
000

<210> 34

<400> 34
000

<210> 35
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CXCR4 agonist SDF-1-derived cyclic amide
      (E24/K28)

```

<220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> Lys may be modified with a substituent that may be a hydrogen, alkyl, aryl or polyetheleneglycol (PEG) moiety

<220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> Xaa = an amino acid that may be either an L-Pro or a D-Pro moiety

<220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> Xaa = an amino acid that may be either an L-Leu or a D-Leu moiety

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently present or absent

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 35
 Lys Xaa Val Ser Xaa Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 36
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist SDF-1-derived cyclic acid (K20/E24)

<220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> Lys may be modified with a substituent that may be a hydrogen, alkyl, aryl or polyetheleneglycol (PEG) moiety

<220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> Xaa = an amino acid that may be either an L-Pro or a D-Pro moiety

<220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> Xaa = an amino acid that may be either an L-Leu or a D-Leu Moiety

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently present or absent

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 36
 Lys Xaa Val Ser Xaa Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 37
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-K28/D24-(E24->D)-cyclic acid

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently present or absent

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<400> 37
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Asp Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 38
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14) - (G) -4-SDF-1(55-67) -K28/D24 - (E24->D) -cyclic
 amide

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 38
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Asp Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 39
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14) - (G) -4-SDF-1(55-67) -O20/E24 - (K20->O) -cyclic
 acid

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<220>
 <221> MISC_FEATURE
 <222> (20)..(20)
 <223> Xaa = Orn

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<400> 39
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Xaa Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 40
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-O20/E24-(K20->O)-cyclic
 amide

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<220>
 <221> MISC_FEATURE
 <222> (20)..(20)
 <223> Xaa = Orn

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 40
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Xaa Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 41
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-O28/E24-(K28->O)-cyclic
 acid

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MISC_FEATURE
 <222> (28)..(28)
 <223> Xaa = Orn

<400> 41
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Xaa Ala Leu Asn
 20 25 30

<210> 42
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-O28/E24-(K28->O)-cyclic
 amide

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MISC_FEATURE
 <222> (28)..(28)
 <223> Xaa = Orn

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 42
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Xaa Ala Leu Asn
 20 25 30

<210> 43
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-O20/D24-(K20->O
 & E24->D)-cyclic acid

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently present or absent

<220>
 <221> MISC_FEATURE
 <222> (20)..(20)
 <223> Xaa = Orn

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<400> 43
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Xaa Trp Ile Gln Asp Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 44
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-SDF-1(55-67)-O20/D24-(K20->O
 & E24->D)-cyclic amide

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently present or absent

<220>
 <221> MISC_FEATURE
 <222> (20)..(20)
 <223> Xaa = Orn

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 44
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Xaa Trp Ile Gln Asp Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 45
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14) - (G) -4-SDF-1(55-67) -O28/D24 - (K28->O
 & E24->D)-cyclic acid

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MISC_FEATURE
 <222> (28)..(28)
 <223> Xaa = Orn

<400> 45
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Asp Tyr Leu Glu Xaa Ala Leu Asn
 20 25 30

<210> 46
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14) - (G) -4-SDF-1(55-67) -O28/D24 - (K28->O
 & E24->D)-cyclic amide

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MISC_FEATURE
 <222> (28)..(28)
 <223> Xaa = Orn

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

 <400> 46
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Asp Tyr Leu Glu Xaa Ala Leu Asn
 20 25 30

 <210> 47
 <211> 33
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-MIP-1alpha(36-50)-amide

 <220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

 <220>
 <221> MOD_RES
 <222> (33)..(33)
 <223> AMIDATION

 <400> 47
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Ser Lys Pro Gly Val Ile Phe Leu Thr Lys Arg Ser Arg Gln
 20 25 30
 Val

 <210> 48
 <211> 58
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-MIP-1alpha(11-50)-amide

 <220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

 <220>
 <221> MOD_RES
 <222> (58)..(58)
 <223> AMIDATION

 <400> 48
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15

Gly Gly Cys Cys Phe Ser Tyr Thr Ser Arg Gln Ile Pro Gln Asn Phe
 20 25 30
 Ile Ala Asp Tyr Phe Glu Thr Ser Ser Gln Cys Ser Lys Pro Gly Val
 35 40 45
 Ile Phe Leu Thr Lys Arg Ser Arg Gln Val
 50 55

<210> 49
 <211> 33
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist
 SDF-1(1-14)-(G)-4-MIP-1alpha(56-70)-amide

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently
 present or absent

<220>
 <221> MOD_RES
 <222> (33)..(33)
 <223> AMIDATION

<400> 49
 Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Glu Glu Trp Val Gln Lys Tyr Val Asp Asp Leu Glu Leu Ser
 20 25 30
 Ala

<210> 50
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist SDF-1-derived E24/K28-cyclic
 amide

<220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> Lys may be modified with a substituent that may be a
 hydrogen, alkyl, aryl or polyethylene glycol (PEG) moiety

<220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> Xaa = an amino acid that may be either an L-Pro or a
 D-Pro moiety

<220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> Xaa = an amino acid that may be either an L-Leu or a
 D-Leu moiety

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently present or absent

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 50
 Lys Xaa Val Ser Xaa Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 51
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CXCR4 agonist SDF-1-derived E24/K28-cyclic amide

<220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> Lys may be modified with a substituent that may be a hydrogen, alkyl, aryl or polyethylene glycol (PEG) moiety

<220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> Xaa = an amino acid that may be either an L-Pro or a D-Pro moiety

<220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> Xaa = an amino acid that may be either an L-Leu or a D-Leu moiety

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN (SEQ ID NO:52) via a moiety providing covalent attachment between N and C terminal portions of the peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 51
 Lys Xaa Val Ser Xaa Ser Tyr Arg Cys Pro Cys Arg Phe Xaa
 1 5 10

<210> 52
 <211> 13
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> portion of synthetic CXCR4 agonist SDF-1-derived
 E24/K28-cyclic amide

 <220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:51) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

 <220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

 <220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

 <400> 52
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

 <210> 53
 <211> 31
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> synthetic CXCR4 agonist SDF-1-derived K20/E24-cyclic
 amide

 <220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> Lys may be modified with a substituent that may be a
 hydrogen, alkyl, aryl or polyethylene glycol (PEG) moiety

 <220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> Xaa = an amino acid that may be either an L-Pro or a
 D-Pro moiety

 <220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> Xaa = an amino acid that may be either an L-Leu or a
 D-Leu moiety

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently present or absent

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 53
 Lys Xaa Val Ser Xaa Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 54
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CXCR4 agonist SDF-1-derived K20/E24-cyclic amide

<220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> Lys may be modified with a substituent that may be a hydrogen, alkyl, aryl or polyethylene glycol (PEG) moiety

<220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> Xaa = an amino acid that may be either an L-Pro or a D-Pro moiety

<220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> Xaa = an amino acid that may be either an L-Leu or a D-Leu moiety

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN (SEQ ID NO:55) via a moiety providing covalent attachment between N and C terminal portions of the peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 54
 Lys Xaa Val Ser Xaa Ser Tyr Arg Cys Pro Cys Arg Phe Xaa
 1 5 10

```

<210> 55
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CXCR4 agonist SDF-1-derived
      K20/E24-cyclic amide.

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:54) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 55
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1             5             10

<210> 56
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 56
Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
1             5             10             15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
      20             25             30

```

<210> 57
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 57
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Phe Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 58
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:59) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 58
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Phe Arg Phe Xaa
 1 5 10

<210> 59
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
 (SEQ ID NO:58) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

```

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 59
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1           5           10

<210> 60
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 60
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Phe Arg Phe Phe Gly Gly
1           5           10           15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20           25           30

<210> 61
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

```

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:62) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 61
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Phe Arg Phe Xaa
 1 5 10

<210> 62
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
 (SEQ ID NO:61) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (2)..(6)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 62
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 63
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 63
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro His Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 64
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:65) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 64
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro His Arg Phe Xaa
 1 5 10

<210> 65
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:64) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (2)..(6)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 65
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 66
 <211> 31
 <212> PRT
 <213> Artificial Sequence

```

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 66
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro His Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 67
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:68) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 67
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro His Arg Phe Phe
1          5          10

<210> 68
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

```

```

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:67) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> cyclized

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 68
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 69
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 69
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Trp Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
      20          25          30

<210> 70
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

```


<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:71) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 70
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Trp Arg Phe Xaa
 1 5 10

<210> 71
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
 (SEQ ID NO:70) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (2)..(6)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 71
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 72
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 72
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Trp Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 73
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:74) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 73
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Trp Arg Phe Xaa
 1 5 10

<210> 74
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
 (SEQ ID NO:73) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (2)..(6)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 74
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 75
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 75
 Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Ala Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 76
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:77) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 76
 Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Ala Arg Phe Xaa
 1 5 10

<210> 77
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

```

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:76) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 77
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1           5           10

<210> 78
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 78
Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Ala Arg Phe Phe Gly Gly
1           5           10           15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
      20           25           30

<210> 79
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

```

```

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:80) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 79
Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Ala Arg Phe Xaa
1          5          10

<210> 80
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:79) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 80
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 81
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

```

```

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 81
Lys Pro Val Ser Leu Ser Tyr Arg His Pro Ala Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 82
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIIQEYLEKALN
      (SEQ ID NO:83) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 82
Lys Pro Val Ser Leu Ser Tyr Arg His Pro Ala Arg Phe Xaa
1          5          10

<210> 83
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:82) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 83
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

```

```

<210> 84
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 84
Lys Pro Val Ser Leu Ser Tyr Arg His Pro Ala Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
      20          25          30

<210> 85
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:86) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 85
Lys Pro Val Ser Leu Ser Tyr Arg His Pro Ala Arg Phe Xaa
1          5          10

<210> 86
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

```

```

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:85) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 86
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1           5           10

<210> 87
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 87
Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Ala Arg Phe Phe Gly Gly
1           5           10           15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
      20           25           30

<210> 88
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIIQEYLEKALN
      (SEQ ID NO:89) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

```


<400> 88
 Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Ala Arg Phe Xaa
 1 5 10

<210> 89
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:88) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (2)..(6)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 89
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 90
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

```

<400> 90
Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Ala Arg Phe Phe Gly Gly
1           5           10           15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20           25           30

<210> 91
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:92) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 91
Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Ala Arg Phe Xaa
1           5           10

<210> 92
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:91) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 92
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1           5           10

```

```

<210> 93
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 93
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Tyr Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 94
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:95) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 94
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Tyr Arg Phe Xaa
1          5          10

<210> 95
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:94) via a moiety providing covalent attachment
      between N and C terminal portions of the peptides, such
      as NH-2-(CH-2)-n-COOH (n = 0-20)

```

```

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 95
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1           5           10

<210> 96
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 96
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Tyr Arg Phe Phe Gly Gly
1           5           10           15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20           25           30

<210> 97
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

```

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:98) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 97
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Tyr Arg Phe Xaa
 1 5 10

<210> 98
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:97) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (2)..(6)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 98
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 99
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 99
 Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Tyr Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 100
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:101) via a moiety providing covalent attachment
 between N and C terminal portions of the peptides, such
 as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 100
 Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Tyr Arg Phe Xaa
 1 5 10

<210> 101
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:100) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (2)..(6)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 101
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 102
 <211> 31
 <212> PRT
 <213> Artificial Sequence

```

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 102
Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Tyr Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 103
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:104) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 103
Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Tyr Arg Phe Xaa
1          5          10

<210> 104
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

```

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:103) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (2)..(6)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 104
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 105
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 105
 Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Ala Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 106
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:107) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 106
 Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Ala Arg Phe Xaa
 1 5 10

<210> 107
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:106) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (2)..(6)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 107
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 108
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

```

<400> 108
Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Ala Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 109
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:110) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 109
Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Ala Arg Phe Xaa
1          5          10

<210> 110
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:109) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<400> 110
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 111
<211> 31
<212> PRT
<213> Artificial Sequence

```

```

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 111
Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Phe Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 112
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:113) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 112
Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Phe Arg Phe Xaa
1          5          10

<210> 113
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:112) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

```

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

 <400> 113
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

 <210> 114
 <211> 31
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> synthetic CTCE0021-like analog CXCR4 agonist

 <220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

 <220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

 <220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

 <400> 114
 Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Phe Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

 <210> 115
 <211> 14
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

 <220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

 <220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:116) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 115
 Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Phe Arg Phe Xaa
 1 5 10

<210> 116
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
 (SEQ ID NO:115) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (2)..(6)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 116
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 117
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 117
 Lys Pro Val Ser Leu Ser Tyr Arg His Pro His Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

```

<210> 118
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:119) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 118
Lys Pro Val Ser Leu Ser Tyr Arg His Pro His Arg Phe Xaa
1          5          10

<210> 119
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:118) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 119
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 120
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

```

```

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 120
Lys Pro Val Ser Leu Ser Tyr Arg His Pro His Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 121
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:122) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 121
Lys Pro Val Ser Leu Ser Tyr Arg His Pro His Arg Phe Xaa
1          5          10

<210> 122
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:121) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

```

```

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 122
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1           5           10

<210> 123
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 123
Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Trp Arg Phe Phe Gly Gly
1           5           10           15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20           25           30

<210> 124
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:125) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 124
Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Trp Arg Phe Xaa
1           5           10

```



```

<210> 125
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
X (SEQ ID NO:124) via a moiety providing covalent attachment between N and C terminal portions of the peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 125
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1 5 10

<210> 126
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (20)..(24)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 126
Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Trp Arg Phe Phe Gly Gly
1 5 10 15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
20 25 30

```

```

<210> 127
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:128) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 127
Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Trp Arg Phe Xaa
1          5          10

<210> 128
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0021-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:127) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (2)..(6)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 128
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 129
<211> 31
<212> PRT
<213> Artificial Sequence

```

```

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 129
Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 130
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:131) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 130
Lys Pro Val Ser Leu Ser Tyr Arg Cys Pro Cys Arg Phe Xaa
1          5          10

<210> 131
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

```

```

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:130) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 131
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1           5           10

<210> 132
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 132
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Phe Arg Phe Phe Gly Gly
1           5           10           15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
      20           25           30

<210> 133
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:134) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

```

<400> 133
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Phe Arg Phe Xaa
 1 5 10

<210> 134
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
 (SEQ ID NO:133) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 134
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 135
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 135
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Phe Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 136
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:137) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 136
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Phe Arg Phe Xaa
 1 5 10

<210> 137
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:136) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 137
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

```

<210> 138
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 138
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro His Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 139
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:140) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 139
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro His Arg Phe Xaa
1          5          10

<210> 140
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:139) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

```

```

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 140
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 141
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 141
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro His Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 142
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

```



```

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:143) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 142
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro His Arg Phe Xaa
1          5          10

<210> 143
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:142) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 143
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 144
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

```

<400> 144
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Trp Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 145
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:146) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 145
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Trp Arg Phe Xaa
 1 5 10

<210> 146
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
 (SEQ ID NO:145) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 146
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 147
 <211> 31
 <212> PRT
 <213> Artificial Sequence

```

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 147
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Trp Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 148
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:149) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 148
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Trp Arg Phe Xaa
1          5          10

<210> 149
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

```

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:148) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 149
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 150
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 150
 Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Ala Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 151
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:152) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 151
 Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Ala Arg Phe Xaa
 1 5 10

<210> 152
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
 (SEQ ID NO:151) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 152
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 153
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 153
 Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Ala Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 154
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:155) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 154
 Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Ala Arg Phe Xaa
 1 5 10

<210> 155
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:154) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation.

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 155
 Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

```

<210> 156
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 156
Lys Pro Val Ser Leu Ser Tyr Arg His Pro Ala Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 157
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:158) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 157
Lys Pro Val Ser Leu Ser Tyr Arg His Pro Ala Arg Phe Xaa
1          5          10

<210> 158
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:157) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

```

```

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 158
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 159
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 159
Lys Pro Val Ser Leu Ser Tyr Arg His Pro Ala Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 160
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

```



```

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:161) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 160
Lys Pro Val Ser Leu Ser Tyr Arg His Pro Ala Arg Phe Xaa
1          5          10

<210> 161
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:160) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 161
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 162
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

```

<400> 162
 Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Ala Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 163
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:164) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 163
 Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Ala Arg Phe Xaa
 1 5 10

<210> 164
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:163) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 164
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 165
 <211> 31
 <212> PRT
 <213> Artificial Sequence

```

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 165
Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Ala Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 166
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:167) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 166
Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Ala Arg Phe Xaa
1          5          10

<210> 167
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

```

```

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:166) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 167
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1           5           10

<210> 168
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 168
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Tyr Arg Phe Phe Gly Gly
1           5           10           15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
      20           25           30

<210> 169
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:170) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

```

<400> 169
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Tyr Arg Phe Xaa
 1 5 10

<210> 170
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:169) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 170
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 171
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

```

<400> 171
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Tyr Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 172
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:173) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 172
Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Tyr Arg Phe Xaa
1          5          10

<210> 173
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:172) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 173
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

```

```

<210> 174
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 174
Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Tyr Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 175
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:176) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 175
Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Tyr Arg Phe Xaa
1          5          10

<210> 176
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:175) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

```

```

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 176
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 177
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 177
Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Tyr Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 178
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

```


<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:179) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 178
 Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Tyr Arg Phe Xaa
 1 5 10

<210> 179
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
 (SEQ ID NO:178) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 179
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 180
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 180
 Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Ala Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 181
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:182) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 181
 Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Ala Arg Phe Xaa
 1 5 10

<210> 182
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:181) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 182
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 183
 <211> 31
 <212> PRT
 <213> Artificial Sequence

```

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 183
Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Ala Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 184
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:185) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 184
Lys Pro Val Ser Leu Ser Tyr Arg Tyr Pro Ala Arg Phe Xaa
1          5          10

<210> 185
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

```

```

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:184) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 185
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1           5           10

<210> 186
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 186
Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Phe Arg Phe Phe Gly Gly
1           5           10           15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20           25           30

<210> 187
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:188) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

```

```

<400> 187
Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Phe Arg Phe Xaa
1          5          10

<210> 188
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:187) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 188
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 189
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

```

<400> 189
 Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Phe Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 190
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIIQEYLEKALN
 (SEQ ID NO:191) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 190
 Lys Pro Val Ser Leu Ser Tyr Arg Phe Pro Phe Arg Phe Xaa
 1 5 10

<210> 191
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
 (SEQ ID NO:190) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 191
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

```

<210> 192
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 192
Lys Pro Val Ser Leu Ser Tyr Arg His Pro His Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 193
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:194) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 193
Lys Pro Val Ser Leu Ser Tyr Arg His Pro His Arg Phe Xaa
1          5          10

<210> 194
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:193) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

```

```

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 194
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 195
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (31)..(31)
<223> AMIDATION

<400> 195
Lys Pro Val Ser Leu Ser Tyr Arg His Pro His Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
          20          25          30

<210> 196
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Lys is modified with polyethylene glycol (PEG)

```



```

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:197) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 196
Lys Pro Val Ser Leu Ser Tyr Arg His Pro His Arg Phe Xaa
1          5          10

<210> 197
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX
      (SEQ ID NO:196) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 197
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 198
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MISC_FEATURE
<222> (24)..(28)
<223> side chain cyclized using lactam formation

<400> 198
Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Trp Arg Phe Phe Gly Gly
1          5          10          15
Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
20          25          30

```

```

<210> 199
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
      (SEQ ID NO:200) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 199
Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Trp Arg Phe Xaa
1          5          10

<210> 200
<211> 13
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
      (SEQ ID NO:199) via a moiety providing covalent
      attachment between N and C terminal portions of the
      peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 200
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1          5          10

<210> 201
<211> 31
<212> PRT
<213> Artificial Sequence

<220>
<223> synthetic CTCE0022-like analog CXCR4 agonist

```

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

<220>
 <221> MISC_FEATURE
 <222> (24)..(28)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 201
 Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Trp Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 202
 <211> 14
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Lys is modified with polyethylene glycol (PEG)

<220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:203) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 202
 Lys Pro Val Ser Leu Ser Tyr Arg Trp Pro Trp Arg Phe Xaa
 1 5 10

<210> 203
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CTCE0022-like analog CXCR4 agonist

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
 (SEQ ID NO:202) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

 <220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

 <400> 203
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

 <210> 204
 <211> 14
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> portion of synthetic CXCR4 agonist SDF-1-derived cyclic
 amide (E24/K28)

 <220>
 <221> MISC_FEATURE
 <222> (1)..(1)
 <223> Lys may be modified with a substituent that may be a
 hydrogen, alkyl, aryl or polyethylene glycol (PEG) moiety

 <220>
 <221> MISC_FEATURE
 <222> (2)..(2)
 <223> Xaa = an amino acid that may be either an L-Pro or a
 D-Pro moiety

 <220>
 <221> MISC_FEATURE
 <222> (5)..(5)
 <223> Xaa = an amino acid that may be either an L-Leu or a
 D-Leu moiety

 <220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:205) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

 <400> 204
 Lys Xaa Val Ser Xaa Ser Tyr Arg Cys Pro Cys Arg Phe Xaa
 1 5 10

 <210> 205
 <211> 13
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> portion of synthetic CXCR4 agonist SDF-1-derived cyclic
 amide (E24/K28)

```

<220>
<221> MOD_RES
<222> (1)..(1)
<223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRF
X (SEQ ID NO:204) via a moiety providing covalent
attachment between N and C terminal portions of the
peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
<221> MISC_FEATURE
<222> (6)..(10)
<223> side chain cyclized using lactam formation

<220>
<221> MOD_RES
<222> (13)..(13)
<223> AMIDATION

<400> 205
Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
1 5 10

<210> 206
<211> 14
<212> PRT
<213> Artificial Sequence

<220>
<223> portion of synthetic CXCR4 agonist SDF-1-derived cyclic
acid (K20/E24)

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> Lys may be modified with a substituent that may be a
hydrogen, alkyl, aryl or polyethylene glycol (PEG) moiety

<220>
<221> MISC_FEATURE
<222> (2)..(2)
<223> Xaa = an amino acid that may be either an L-Pro or a
D-Pro moiety

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> Xaa = an amino acid that may be either an L-Leu or a
D-Leu moiety

<220>
<221> MOD_RES
<222> (14)..(14)
<223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
X (SEQ ID NO:207) via a moiety providing covalent
attachment between N and C terminal portions of the
peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<400> 206
Lys Xaa Val Ser Xaa Ser Tyr Arg Cys Pro Cys Arg Phe Xaa
1 5 10

```

<210> 207
 <211> 13
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> portion of synthetic CXCR4 agonist SDF-1-derived cyclic acid (K20/E24)

<220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KXVSXSYRCPCRFX (SEQ ID NO:206) via a moiety providing covalent attachment between N and C terminal portions of the peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

<220>
 <221> MISC_FEATURE
 <222> (6)..(10)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

<400> 207
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

<210> 208
 <211> 31
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> synthetic CXCR4 agonist

<220>
 <221> MISC_FEATURE
 <222> (17)..(18)
 <223> Gly in positions 17 and/or 18 may be independently present or absent

<220>
 <221> MISC_FEATURE
 <222> (20)..(24)
 <223> side chain cyclized using lactam formation

<220>
 <221> MOD_RES
 <222> (31)..(31)
 <223> AMIDATION

<400> 208
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Phe Arg Phe Phe Gly Gly
 1 5 10 15
 Gly Gly Leu Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 20 25 30

<210> 209
 <211> 14
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> portion of synthetic CXCR4 agonist

 <220>
 <221> MOD_RES
 <222> (14)..(14)
 <223> Xaa = Phe linked to Leu at position 1 of XKWIQEYLEKALN
 (SEQ ID NO:210) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

 <400> 209
 Lys Pro Val Ser Leu Ser Tyr Arg Ala Pro Phe Arg Phe Xaa
 1 5 10

 <210> 210
 <211> 13
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> portion of synthetic CXCR4 agonist

 <220>
 <221> MOD_RES
 <222> (1)..(1)
 <223> Xaa = Leu linked to Phe at position 14 of KPVSLSYRAPFRFX
 (SEQ ID NO:209) via a moiety providing covalent
 attachment between N and C terminal portions of the
 peptides, such as NH-2-(CH-2)-n-COOH (n = 0-20)

 <220>
 <221> MISC_FEATURE
 <222> (2)..(6)
 <223> side chain cyclized using lactam formation

 <220>
 <221> MOD_RES
 <222> (13)..(13)
 <223> AMIDATION

 <400> 210
 Xaa Lys Trp Ile Gln Glu Tyr Leu Glu Lys Ala Leu Asn
 1 5 10

 <210> 211
 <211> 4
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> 4 glycine linking moiety, [linker]

 <400> 211
 Gly Gly Gly Gly
 1

<210> 212
 <211> 4
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> three or four glycine linker

 <220>
 <221> MISC_FEATURE
 <222> (4)..(4)
 <223> Gly in position 4 may be present or absent

 <400> 212
 Gly Gly Gly Gly
 1

 <210> 213
 <211> 4
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> G-1-4 linker

 <220>
 <221> MISC_FEATURE
 <222> (2)..(4)
 <223> Gly in positions 2-4 may be present or absent

 <400> 213
 Gly Gly Gly Gly
 1

 <210> 214
 <211> 4
 <212> PRT
 <213> Artificial Sequence

 <220>
 <223> variable spacer monomer

 <220>
 <221> MISC_FEATURE
 <222> (3)..(4)
 <223> Gly in positions 3-4 may be present or absent

 <400> 214
 Gly Gly Gly Gly
 1